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Master in Management Program

**Influence of state ownership of oil&gas companies equity on the
level of participation in foreign projects**

Master thesis by the 2nd year student
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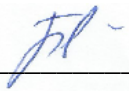
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ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

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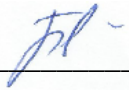
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Аннотация

Автор	Бовыкин Алексей Юрьевич
Название магистерской диссертации	Влияние государственного участия в капитале нефтегазовых компаний на величину доли в зарубежных проектах
Факультет	Высшая Школа Менеджмента
Направление подготовки	Менеджмент
Год	2018
Научный руководитель	Гаранина Ольга Леонидовна
Описание цели, задач и основных результатов	<p>Цель исследования – определить влияние государственного участия в капитале нефтегазовых компаний на их долю в зарубежных проектах по разведке и добыче нефти и газа.</p> <p>Для достижения данной цели, автор воспользовался положениями теории интернационализации государственных компаний из растущих рынков.</p> <p>Эмпирическое исследование было проведено с использованием двух типов регрессии на выборке из 441 зарубежного проекта 25 ведущих нефтегазовых компаний.</p> <p>Результаты исследования показывают, что контролируемые государством нефтегазовые компании имеют большую долю в зарубежных проектах в сравнении с частными компаниями.</p>
Ключевые слова	Нефть и газ, государственная нефтяная компания, государственная компания, многонациональная компания

Abstract

Master Student's Name	Aleksei Bovykin
Master Thesis Title	Influence of state ownership of oil&gas companies equity on the level of participation in foreign projects
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Academic Advisor's Name	Garanina Olga Leonidovna
Description of the goal, tasks, and main results	<p>The goal of this research is to identify the influence of state ownership on the level of participation in foreign upstream subsidiaries in the oil&gas sector.</p> <p>To achieve this goal, subsidiary ownership determinants were drawn from state companies internationalization literature and applied to national oil companies context. Two types of regression analysis were used to perform empirical analysis on the sample of foreign projects of 25 leading oil&gas companies. The main result is that majority-state owned companies have a higher share in upstream projects abroad as compared to privately-owned companies.</p>
Keywords	Oil&gas, national oil company, state-owned enterprise, multinational company

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List of Abbreviations

CSA	Country-specific advantage(s) – used interchangeably with ‘location advantages’
EJV	Equity joint venture
EM	Emerging markets
EMNC	Emerging market multinational company
E&P	Exploration and production
FDI	Foreign direct investment
FSA	Firm-specific advantage(s) – used interchangeably with ‘ownership advantages’
IOC	International oil company
MNC	Multinational company
NOC	National oil company
OFDI	Outward foreign direct investment
POE	Privately-owned enterprise
SOE	State-owned enterprise
SOMNC	State-owned multinational enterprise
WOS	Wholly-owned subsidiary

Introduction

The internationalization of state-owned companies has become a prominent phenomenon in the global economy. Although developed countries mostly decided to privatize their state companies, governments of emerging economies not only retained them, but urged such companies to go international. State multinationals invest abroad to receive knowledge, technological and managerial capabilities, brands and other strategic assets they lack. One of the most important assets they seek are natural resources, hydrocarbons in particular. This was one of the reasons why state enterprises in the oil&gas sector – national oil companies - were established. Other reasons - strategic importance of the sector for country economy, desire to maximize rent - urged government to nationalize assets of foreign companies or build national oil champions from scratch.

National oil&gas companies go abroad to secure stable supplies through acquisitions of upstream assets if their home country lacks them, or to keep up with international competition and become a global player. They are increasingly important players in the global oil&gas markets. In particular, national oil companies possess the absolute majority of proved oil reserves and more than half of undiscovered reserves. Moreover, they account for three-fourths of global crude oil production. Thus, the understanding of their internationalization patterns is essential for both oil&gas researchers, as well as for industry players.

However, the general theory was initially developed to explain the internationalization of privately owned companies from developed counties. As such, it misses important idiosyncrasies of state multinationals, such as distinct kind of firm-specific advantages, other strategic intents and location preferences. To overcome this drawback, scholars have developed a specialized internationalization theory for state-owned multinational companies from emerging markets. It helped to address issues not covered by general theory by taking into consideration the effects of state ownership and weak institutional environment context in the emerging markets.

At the same time, a separate stream of research is dedicated to the study of national oil companies. Scholars have thoroughly investigated the reasons behind the establishment of national oil champions. Also, the comparison of state and private oil companies efficiency is a major point for discussion. As regards internationalization, the researchers have focused on firm-specific, or ownership advantages – access to capital lending at below market rates, information support from government, state political backing and experience of operating in an uncertain environment, stemming from their origin in emerging markets. Researchers have also pointed at the ‘national purpose’ of state oil companies – the set of non-commercial goals, which change market based decision making patterns. This set is defined by the government and can include a

broad range of goals – bilateral trade promotion, geopolitical power projection or national energy security enhancement.

One particular part of internationalization process of state oil companies – internalization – have received scarce attention. In particular, ownership level choice in a foreign subsidiary is one of the most important strategic decisions in internationalization because it determines the reward a company would get, as well as the amount of risk it has to bear. It is a well-established fact in the literature that choosing the right level of participation determines long-term viability and success of a joint venture (or a wholly-owned subsidiary). Coupled with the role of national oil companies in the industry and global economy, it means, that the understanding of this aspect of internationalization is essential for academic theory and industry professionals. At the same time, one of the factors that influence the choice of ownership in a foreign subsidiary is state participation in a company equity capital, as established by the researchers of state multinationals.

Hence, the purpose of this paper is to identify the influence of state ownership on the level of participation in foreign upstream projects of oil companies. Upstream sector comprises exploration, development and production projects of oil&gas reserves, i.e. it includes activities from the initial search for resources to their extraction. This paper concentrates on the upstream sector because its capital and technological intensity makes it one of the most difficult types of foreign investments and differentiates it from other sectors (Cheon 2015). To achieve this goal the following objectives should be met:

- Identify the differences in the internationalization of state and privately owned oil&gas companies according to the eclectic paradigm
- Establish the applicability of state-owned multinational companies literature findings to national oil companies in regard to participation level choice in foreign subsidiaries
- Test the influence of state ownership on the level of participation in foreign subsidiaries using two different specifications – linear and logistic regression

This paper is structured according to these objectives. We start by looking at the three dimensions of eclectic paradigm – ownership, location and internalization advantages, and explaining how the framework is usefully complemented by bundling theory of foreign market entry modes. Next, the comparison of state and privately owned oil companies internationalization is provided in all three dimensions of the eclectic paradigm with an aim to demonstrate the difference between two types of oil companies, especially at the third part of the model – internalization – as it comprises subsidiary ownership level choice. In this way, we

demonstrate that general theory needs adjustments to explain strategic choices of state oil companies in regard to the level of participation in their projects abroad.

Next, we show the relevance of literature on state-owned companies to national oil companies by looking at their distinctive features. We then move to the discussion of findings on internationalization of state companies, particularly in regard to internalization advantages. It is then coupled with emerging markets context – a separate theory was already generalized for state-owned multinational from developing countries. Thus, using the empirical evidence (for all state enterprises) on the influence of government ownership on company internalization decisions, a proposition is developed about the same process in the oil&gas industry. It is empirically tested using two types of regression on a sample of foreign upstream subsidiaries of 25 leading oil&gas companies according to Platts global ranking. Finally, empirical research results are interpreted using state enterprises theory, as well as practical relevance is explained.

1. Internationalization of oil&gas companies in the context of state ownership and emerging market specifics

This chapter will proceed as follows. First, we will look at the relevant theories of internationalization process for oil&gas industry, namely, the OLI parading and bundling model of foreign markets entry, as well as how they complement each other in determining the level of ownership in foreign subsidiaries.

Next, the comparison of state and privately owned oil&gas companies internationalization will be made according to the three blocks of the eclectic paradigm. In addition, the specifics of internationalization in the upstream sector will be explained. By doing so, we will show how internationalization of state-owned oil companies differs from what is predicted by the general theory.

After that, we will justify the relevance of state-owned enterprises literature to national oil companies by looking at the shared features of both types of companies. As soon as the link is established, we will move to the description of the literature on multinational state-owned enterprises from emerging markets. First, description of relevant research of state companies from emerging markets and national oil companies internationalization will be provided to highlight important findings and emphasize what is left to be investigated. Next, we will show how findings on state multinationals from emerging markets can be used to explain the specific features of national oil companies in regard to internalization process. Building on that, the proposition regarding subsidiary ownership level choice will be made.

1.1 Review of relevant internationalization theory frameworks

Internationalization strategies have received ample attention from international business scholars, but for this research eclectic theory (or OLI paradigm) was chosen for two main reasons (Dunning 1988; Dunning and Lundan 2008). First, it is one of the most influential theories in this field, that can be applied to different industries and rationales of expansion (for application check Dunning 1998). Second, this theory captures several stages in the process: the decision to internationalize, location choice, specific entry mode choice. The latter stage is not very much covered by eclectic theory, but it can and will be usefully complemented by Hennart bundling model.

According to the OLI framework, companies choose to invest abroad if a combination of three types of advantages is present:

1. Ownership – a company possess transferable across its facilities firm-specific advantages, which give it market power, such as skills, know-how, products, etc.

2. Location – the company can benefit from establishing operations in a particular country because the latter have country-specific advantages, which differentiate it from a home country (low-cost labor, natural resources, etc.).
3. Internalization – the company will benefit from conducting operations in this country internally, rather than organizing them in the market (contracting products and services).

In the upstream segment of oil&gas industry, companies have ownership advantages because of capital and technological intensity, countries have location advantages due to the pre-determined geological formation of hydrocarbon reserves, while the character of company-level capabilities and assets they seek requires internalization of activities.

Thus, firms choose to establish operations abroad instead of exporting products if their ownership advantages can be best realized when complemented with location-specific advantages of foreign countries, rather than home location. They also decide to conduct activities internally if it is hard to transfer ownership advantages, there is a risk to lose them, to reduce agency costs, or to gain access to a strategic asset.

In the context of the upstream oil&gas industry, it means that companies have to invest abroad to gain access to hydrocarbon reserves, which they can exploit with benefit by using their capabilities, technologies and capital investments.

One notable exception is those oil&gas companies, which are situated in countries with vast hydrocarbons endowment and demonstrate no intention or need to internationalize, such as Iranian and Nigerian national oil companies. These companies are out of the scope of this research paper for the exact reason that they do not invest abroad.

Further, firms have ownership advantages, such as managerial skills, technological expertise, access to capital or ability to operate in a weak institutional environment. At the same time, governments and local partners have very strong location advantages due to the nature of hydrocarbon reserves. Therefore, even if foreign investors prefer to conduct operations without other parties via a wholly-owned subsidiary (WOS), the exact form of entry mode to another country is often a subject of bargaining (Vernon 1971).

In order to establish which factors contribute to this bargaining process, foreign entry model of Anderson and Gatignon will be used to understand the decision-making process on the part of an entrant. It will then be complemented by bundling model of foreign market entry (Hennart 2009). Although there are several other prominent frameworks of market entry mode determinants, Hennart model provides the most comprehensive view of the local market conditions.

According to a theoretical framework designed by Anderson and Gatignon, companies decide on how to enter a foreign market in terms of the desired level of control. Control is used as a proxy for the risk tolerance and target return – two determinant of strategic long-term decisions. The degree of control a firm wants in a foreign subsidiary depends on three constructs (the fourth one – brand – is of lower importance to the oil&gas industry): specificity of assets for a transaction, external and internal uncertainty (Anderson and Gatignon 1986). For instance, in the case of an international oil company (IOC)¹ entering a foreign country, asset specificity will be high, because it provides its technological expertise, specialized for the industry, as well as management skills, which cannot be applied in a broader range of natural resource extraction sectors. Such company would also have a low level of internal uncertainty because of the well-established management systems, high understanding of its mature product and experience in international operations. External uncertainty will depend on the specific country it decides to enter – level of risk, regulatory environment, political system.

Thus, for Anderson and Gatignon the level of control, and as a consequence a decision between WOS, JV and the stake in the latter, is a tradeoff between risk and return. This tradeoff depends on the assets an entrant contributes, ability to control its agents abroad and country risk. Using this determinants, it is possible to decide on the level of participation a company should pursue in a foreign market. However, using only this model would limit the choice of the level of participation to a unanimous decision of an entrant. For this reason, it will be complemented with bundling theory.

Hennart's bundling theory takes into consideration both entrant firm needs and target market conditions, as well as the incumbent local firm needs. It also fits well with OLI paradigm and specifies its internalization dimension. Bundling framework builds on the transaction cost theory of the firm and in essence, is an extension of it in a foreign country setting. According to the transaction cost theory, all activities can theoretically be organized through market. There are costs associated with this way of performing operations, called transaction costs. They arise because to organize an activity in the market it is necessary to find relevant information, bargain for conditions and enforce a contract. However, not all contingencies can be put into a contract. Firms exist because they can reduce transaction costs by organizing processes internally, which allows combining activities more efficiently and facilitate information flow (Williamson 1985). A firm will expand until costs of performing an activity internally will not be equal to doing the same through the market (Perman and Scouller 1999).

Hennart uses transaction cost theory to explain the specific choice of foreign market entry mode. As in the OLI paradigm, he states that in order for a foreign investor to exploit its

¹ IOC – large multinational oil company with minority or no state ownership (Stevens 2008)

ownership (firm-specific) advantages, they need to be bundled with local complementary assets – locational advantages. The form this bundle takes, i.e. level of equity ownership of the entrant – WOS, equity JV, licensing – is determined simultaneously by the intentions of the entrant and local owners of complementary assets. Thus, this form of bundling assets is an equilibrium of their choices (Hennart 1988; Hennart 2009).

However, those choices are determined by the transaction costs, associated with the specific type of assets. Table 2 below provides an overview of equilibria resulting from different coincidences of transaction costs.

Table 1. Optimal mode of foreign market entry (Hennart 1988).

		Assets held by an entrant	
		Easy to transact	Difficult to transact
Complementary assets held by local owners	Easy to transact	1. Indeterminate	3. WOS of an entrant
	Difficult to transact	2. Wholly owned operations of local firm/licensing	4. Join ventures between an entrant and local firm

Columns of the table represent transaction costs for the market entrant to organize activities through market, i.e. sell its assets. If the costs are low, an entrant company could provide the assets under certain conditions (if they are easily tradable). For instance, brand is a tradeable asset, which can be used in franchising. In this case, transaction costs for the local company are high because building a brand requires time and effort – that is why this situations ends up at cell 2 – licensing (franchising).

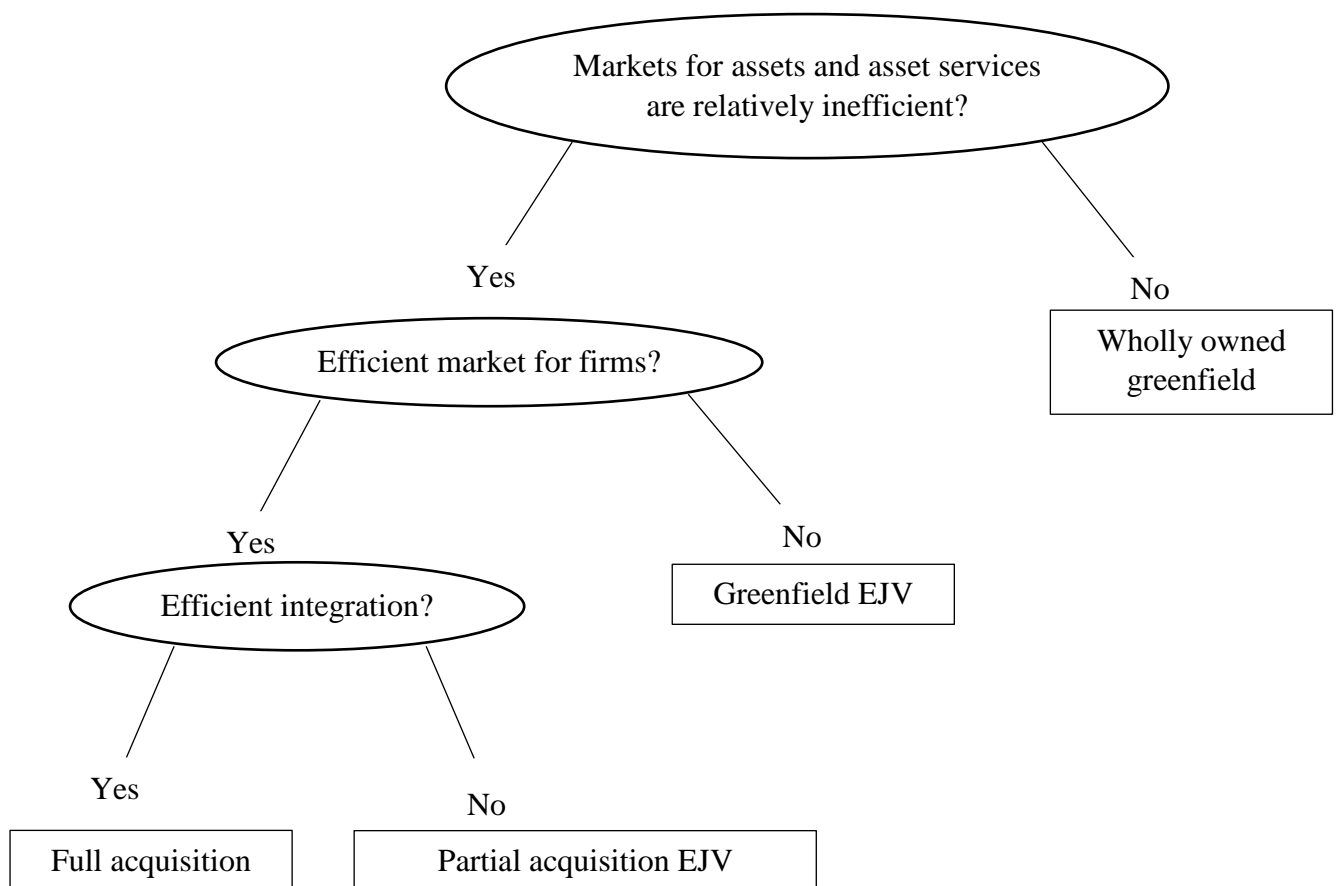
The next section explains why assets of entering oil&gas companies are difficult to transact and licensing is not an option for their internationalization, but for now we will discuss only the implications of this to narrow the scope - only cells 3 and 4 are relevant. The exact outcome depends on the market conditions in a target market. If it is hard to obtain (transact through market) complementary resources on the local market, then, everything else held equal, an entrant would prefer wholly-owned subsidiary (WOS). Otherwise, it will establish an equity

joint venture (EJV). To make it clear, ease of transaction means the tradability of an assets – to what extent it can be provided/acquired by another party on the contractual basis through market.

Both WOS and EJV can take the form of acquisition or greenfield, e.g. and EJV can be a new legal entity (greenfield), or a partial acquisition of a stake in an existing entity with an aim to form a joint venture. According to Hennart, the way WOS or EJV will be formed depends on the market conditions.

Specifically, the same assets can be obtained in the three different markets: market for assets (purchase), services of assets (rent), firms (acquisitions; all subsequently referred to as ‘local markets’). If the transaction costs in one of the markets are high, economic agent can turn to the others (Hennart 2009).

Table 2. Determinants of equity level in a foreign subsidiary (Hennart 2009).



If asset and asset service markets are inefficient, then these assets are embedded in firms and cannot be accessed in disembodied form. To get these assets, a foreign entrant has to turn to the firms market. If this market is inefficient as well, i.e. the costs of finding and acquiring firms are high or it is legally restricted, then an entrant has to start a greenfield EJV with a local partner, which will provide the necessary assets.

In the upstream oil&gas segment it means, that a piece of land/offshore zone with subsoil hydrocarbon resources (oil block or field) can be obtained in the asset market by purchasing it. If this market is inefficient for some reasons, such as legislative restrictions, it can be obtained in the asset service market, which means renting. Finally, a foreign investor can turn to the market for firms and acquire a license holder (company) for this oil block. The process is described in table 3.

If the firms market is efficient, an entrant can acquire either the whole firm or a stake in it (everything else held equal). The decision is determined by the efficiency of integration of potential acquisition, which depends on two factors: modularity of assets and incentive loss. Modularity represents the degree to which desired assets can be disentangled from other assets, so that these can be sold. Incentive loss refers to the motivation of local employees and management – the importance of it and the amount of decrease. If efficient integration is possible, then an entrant will pursue full integration. Otherwise, it will acquire a stake in a local firm, which then converts to an EJV. In this way, an entrant can either get access to only the desired assets or prevent incentive loss (Hennart 2009).

An important theoretical implication of this model is that there is no reason to apply the term ‘equity joint venture’ to only new legal entities. Both greenfield EJVs and partial acquisitions have the same incentives structure and efficiency properties (Hennart 2009). Thus, for the purposes of this study, term EJV will refer to both types without distinction, and the term WOS will refer both to greenfield projects and full acquisitions.

Integration of approaches of Dunning, Hennart, Anderson and Gatignon allows creating a comprehensive understanding of how the level of participation in a foreign subsidiary is determined. Company decides to establish a subsidiary abroad if its firms-specific (ownership) advantages can be best exploited by combining them with country-specific (location) advantages through internal operations.

Depending on the level of external and internal uncertainty, as well as assets transaction specificity of this firm, it decides on the desired level of control. The characteristics of the entrant’s assets in terms of transaction costs are matched with those of local complementary assets. The level of equity participation is then determined by the interaction of the entrant’s desire for control and the efficiency of local markets of complementary assets. Thus, the outcome of this theoretical model depends on the following inputs: characteristics of an entrant assets and of local complementary assets, efficiency of local markets, internal and external uncertainty for the entrant.

In the next section this theoretical framework will be applied to the upstream sector to achieve two objectives: emphasize specificity of internationalization strategies in the upstream

oil&gas sector in general, and examine the different FDI decisions international and national oil companies make. In this way, we will identify those features of national oil companies internationalization, that cannot be explained by the general theory revised in this section.

1.2 Comparison of oil&gas companies internationalization in the upstream sector

In this section we will look at the application of internationalization theory to upstream oil&gas in the following way. The section is divided into three paragraphs, each dedicated to a part of OLI framework. Inside each paragraph we will first look at the specifics of a set of advantages in the upstream oil&gas in general, and then compare differences between national oil companies (NOC)² and international oil companies (IOC) strategies. The determinants of the level of participation (mode of entry) in a foreign project will be analyzed in the last paragraph dedicated to internalization advantages.

Ownership. In terms of ownership advantages, foreign investor usually brings a broad range of firm-level capabilities – those, that can be transferred and applied across projects and geographies, encouraging horizontal integration (Navaretti and Venables 2004). For IOCs these are management skills, technological expertise, and availability of capital.

Management skills refer to a long experience of managing the entire value chain in the oil&gas – from exploration to production, refining, transportation and marketing activities. More relevant aspect to this study is ability to manage large and multi-stage production processes and properly apply new technologies, often available only to majors, in the upstream projects. It creates an important ownership advantage in negotiations with partners with little or no experience in the industry and in managing large-scale long-term projects (Henderson and Ferguson 2014). IOCs also have an access to global capital markets. It gives them an advantage in times of low oil prices (McKern 1993).

In contrast, NOCs are not on the technological edge in comparison with IOCs (although this parameter varies significantly among national companies). Managerial skills often do not represent their advantage either. Nevertheless, they still manage to internationalize using a set of alternative ownership advantages. In particular, researchers found out, that governments often supplies NOCs with cheap capital and provides political backing. Governments do so, because NOCs are used to pursue political goals, enhance bilateral trade, or promote energy security. These two factors allows NOCs to participate in projects, unavailable to IOCs, or outbid them (Buckley et al. 2007).

² NOC – oil company with majority state ownership (Wolf 2009)

In particular, Chinese NOCs – Sinopec, CNPC, CNOOC – work in very close cooperation with the government to improve energy security because of the high dependency of the country on foreign oil supplies. For instance, CNPC got the right of first refusal on four oil blocks in Nigeria with high potential in exchange for the Chinese government commitment to invest in the expansion of local refinery. This kind of resource diplomacy helped Chinese NOCs to secure oil&gas assets in Sudan, Algeria, Tunisia, Angola and other countries. The cooperation of state and state companies is so close, that it causes negative publicity for those companies in countries-recipients of FDI (Paik et al. 2007).

A similar approach is used by Indian state oil companies. The typical way of cooperation is a NOC-NOC agreement with a resource-rich country, backed by Indian government financial support in the form of credits for unspecified goals. For instance, an agreement between ONGC Videsh and Ghana's NOC was supported with Indian government loan to Ghana government in the amount of 60 million dollars, half of which was used to repair presidential palace in Ghana. Similar agreements allowed Indian NOCs to secure assets in Nigeria and Sudan (Paik et al. 2007).

Korean oil company – KNOC – has articulated national mission. The company declares promotion of energy diplomacy with a focus on Russian, Africa, and Central Asia, increase in state financial support for overseas oil investments and enhancement of energy security among its direct goals. KNOC has also secured oil block in Nigeria in exchange for a loan from Korean to Nigerian government (Paik et al. 2007). Similar examples of promotion of non-commercial goals by NOCs and close cooperation of government and oil companies can be found in other countries, but this brief overview provides a perspective on the degree of such cooperation. It allow NOCs to compensate for a relative disadvantage in terms of managerial skills and technological expertise.

Location. As for the locational advantages, these form the most important part of the OLI framework in the upstream sector due to a number of reasons. The first reason is that hydrocarbon reserves are distributed unequally around the world. It means that oil&gas companies have to invest in countries where these reserves are present (table 1). Another reason is the non-renewable and even depleting nature of oil&gas resources (McKern 1993). As a result, companies in this industry are in constant quest for replacing reserves. This factor is reinforced by the fact, that oil&gas companies would have to rely on their competitors supply if they do not secure enough resources, which is not a viable option in the long term. Apart from that, hydrocarbon reserves differ in quality, quantity and the amount of investment required to extract them. This means that on a global scale oil&gas companies compete for the same resource deposits.

One notable exception is those companies, which are situated in countries with vast hydrocarbons endowment and demonstrate no intention or need to internationalize, such as Iranian and Nigerian national oil companies. These companies are out of scope of this research paper for the exact reason that they do not invest abroad.

These geographical and geological factors provide strong locational advantages to the government of rich in hydrocarbon reserves countries, which they clearly understood and became adept to exploit (Henderson and Ferguson 2014).

Table 3. Global distribution of crude oil reserves³ (Heritage Foundation 2017; US EIA 2016).

Country	Crude oil proved reserves (billion barrels), rounded	Economic Freedom Index	Strength of institutions
Venezuela	300	25,2	Very low
Saudi Arabia	266	59,6	Low
Canada	169	77,7	High
Iran	158	50,9	Low
Iraq	142	N/A	Very low
Kuwait	102	62,2	Moderate
UAE	98	77,6	High
Russia	80	58,2	Low
Libya	74	N/A	Very low
United States	39	75,7	High
Nigeria	37	58,5	Low
Kazakhstan	30	69,1	Moderate
Qatar	25	72,6	High
Brazil	13	51,4	Low
Algeria	12	44,7	Very low
Angola	8	48,6	Very low
Ecuador	8	48,5	Very low
Mexico	8	64,8	Moderate
Azerbaijan	7	64,3	Moderate

³ Similar distribution applies to gas reserves

In particular, the allocation of exploration and production licenses may be restricted to foreign companies either for separate, large oilfields, or dependent on special conditions, such as creating a joint venture with a local company and subsequent knowledge sharing. State authorities claim that hydrocarbon reserves have strategic importance, and, therefore, have to be under strict control. Indeed, resource-rich countries often rely heavily on royalties and taxes of oil&gas industry to fund state budget. Additional restrictions and regulations allow to extract more rent from this sector and prevent dependency on foreign companies (Henderson and Ferguson 2014). For instance, hydrocarbons development in Russian Arctic offshore is restricted to state-owned companies and foreign investors can only participate in joint ventures (JV). Another Russian federal law restricts foreign investments in particular large-scale oilfields (Law on Investments in Strategic Assets 2014; Law on Subsoil 1992; Pomeranz 2010).

An important implication of immutability of geographical distribution of reserves is that oil&gas companies must invest in countries with those resources despite the quality of institutional environment, which is one of the most important factors in FDI decisions. In the oil&gas industry, this factor has a much less significance. Countries in table 1 possess 95% of proved world hydrocarbon reserves, meaning that companies have to invest in some of them. Consistent with the literature, Economic Freedom Index was used to assess the strength of institutions in those countries. The index is a robust composite measure of 12 quantitative and qualitative factors, including the rule of law, government and regulatory efficiency, market openness. It can be seen from the table that the majority of countries with rich hydrocarbon endowment have low quality of institutions, which makes it harder to invest in these markets. In fact, there are only 4 countries with favorable business conditions, but they account for roughly one-fifths of proven reserves. As a result, oil&gas companies have to invest in countries with low quality of institutions.

Researchers have identified, that there is a difference in search for locational advantages between NOCs and IOCs. Buckley et al. (2007) have found empirical evidence to the fact that NOCs invest relatively more in exploration project, than production. According to the paper, the reason is that NOC is typically concerned more with energy security of its home countries and for this reason invests in untapped oil and gas field at the phase of exploration. In contrast, IOCs are more interested in short-term value maximization, which makes them invest more in production project that can bring value faster. Moreover, NOCs are ready to pay more for discovered fields for the same reason – promotion of national energy security in the future.

Internalization. The third element of the paradigm – internalization – means, in the context of the oil&gas industry, that companies need to engage in projects abroad by themselves, instead of subcontracting their activities to other parties, due to several reasons.

The first reason is that firm ownership advantages cannot be easily transferred to a third party. On the one hand, transfer of knowledge such as managerial skills (for IOCs) requires high transaction costs because it is embedded in the company itself. For NOCs, it would be cheap state funding and political ties – also non-transferable assets. IOCs also have to protect these ownership advantages, which is not always possible due to incomplete contracts issue (Henderson and Ferguson 2014). On the other hand, oil&gas companies have to engage in upstream projects to recover depleted resources base (internalize hydrocarbon reservoirs) and add new oilfields to their balance sheet. This is one of the pillars of oil&gas companies business strategy and subcontracting development projects to another company would undermine it (Stevens 2016). Finally, companies often want to engage in overseas operations to reduce agency costs, which can arise when foreign subcontractor distorts information about the market and its own operations (Navaretti and Venables 2004).

To sum up, firms choose to establish operations abroad instead of exporting products if their ownership advantages can be best realized when complemented with location specific advantages of foreign countries, rather than home location. They also decide to conduct activities internally if it is hard to transfer ownership advantages, there is a risk to lose them, or to reduce agency costs.

The specificity of the application of this internationalization framework in oil&gas sector is determined by special emphasis on location advantages and internalization of processes. The nature of hydrocarbon reserves - unequal distribution, non-recoverable character, unequal quality - makes companies invest in locations where these resources are present, often despite the institutional environment in host countries. Moreover, high transaction costs of transferring firm-specific advantages and the need to constantly recover reserves or locate downstream operations close to consumers force oil&gas companies to internalize processes. FDI flow in the industry is also constrained by the level of importance host governments assign to its reserves.

There are also differences between internationalization of IOCs and NOCs. Private companies possess managerial skills and technological expertise, while national companies enjoy capital with below market rates, and make use of government political ties. They also prefer to invest in fields in exploration phase.

One sphere where scholars have not yet explained the differences between the two types of oil companies is the ownership level choice in foreign upstream projects. In the next two sections it will be shown, that there is an opportunity to do so by applying findings of internationalization theory of state-owned enterprises (SOEs) to NOCs. To justify this opportunity to close this research gap, we will first explain the similarity between NOCs and SOEs, and then examine what does internationalization theory of SOEs suggests. The review of

the origins of SOEs and NOCs in the next section is also necessary to explain why this new branch of internationalization theory is necessary by looking at distinct features of state companies.

1.3 Characteristics of national oil companies as a major type of state-owned enterprises

In order to understand how state participation alters strategic choices (the level of foreign subsidiary ownership being one of the most important of such decisions) the rationale behind state ownership of companies should be understood.

There are two ways of justifying the creation of SOE: economic and political ones, which are often intertwined. Economic explanation stems from the existence of market failures that may prevent the use of resources in the economy for the increase of public wealth. There are several types of such failures: negative externalities, when firms do not have to compensate for them (such as environmental pollution); information asymmetries, incomplete markets (consumers cannot buy products even if they can afford it), depletion of public goods, and cases for the creation of natural monopolies. The latter can result in higher prices, lower quality and other negative effects, unless properly monitored (Lawson 1994). Government chooses among several ways to correct market failures. It can additionally tax certain types of activities, subsidize other kinds of operations to promote them, impose regulations or decide to provide goods or services by itself, which would result in the creation of SOE (Laffont and Tirole 1993).

Another line of justification of SOEs is widely spread in the oil&gas sector – political arguments. There are four types of them: nationalistic, strategic, social, communistic. The first one - economic nationalism - also have different approaches, which all assume the strategic importance of certain industries. One approach is that government needs to be in charge of ‘commanding heights’ - industries with important linkages in the economy. The reason is that according to this argumentation private sector cannot organize large-scale projects, which are necessary for economic development. Therefore, government should create SOE to speed up national development (Vernon 1971). Another approach considers the need for import substitution to reduce the power of both foreign companies and domestic private enterprises in key industries (Bruton 1998). In close connection to nationalistic view is an argument in favor of national defense, according to which some industries declared to be strategically important for national security. Finally, social argument states that market forces cannot achieve welfare for all categories of population. Therefore, government should create SOE to promote it in the spheres such as healthcare, education, combating poverty (Cuervo-Cazzura, et al. 2014). It will be shown that some of those argument are widely used to justify actions and strategic goals of oil&gas

companies with state ownership, which influences both conditions of countries-recipients of FDI and internationalization decisions of oil&gas companies.

National oil companies constitute one of the most important types of SOEs in global economy (Cheon 2015). Today NOCs account for more than 75% of world crude oil production, possess 60% of undiscovered oil reserves and 90% proved reserves (similar numbers apply to gas and liquids). Out of 25 world top oil companies, 18 are NOCs (Tordo, Tracy and Arfaa 2011). These numbers indicate high importance of NOCs for the global economy and governments.

This role led to a special attention paid to the oil&gas industry, often directly via state ownership. This level of control allows government to force NOCs to pursue a non-commercial set of goals, which can be in general referred to as “national purpose” - efficient oversight, socioeconomic issues, ideology, foreign and domestic political goals (Khan 1987).

The first part of this purpose is monitoring enhancement of the petroleum industry. Proponents of this argument claim, that when a ‘middleman’ – private companies – is engaged in the operations in oil&gas industry, government exists in information asymmetry situation. This means, that private companies are much better informed about geological appraisal results, technical specifics, costs and environmental impact of operations. Government either does not have enough expertise to efficiently monitor the industry, or starts to lose it. The creation of NOC allows resolving this asymmetry by providing state with first-hand information through operational involvement (Stevens 2004).

Another part of national purpose is an ideological one. NOCs are often viewed as symbols of national sovereignty in developing countries, which is an echo of the dominance of IOCs from developed countries before 1970-is. This is one of the reasons why foreign investments are restricted in oil&gas sector to a partnership with local NOCs – to prevent neocolonialism and support sovereignty (Stevens 2004; Linde 2000).

Further, increasing petroleum rent is still important for NOCs. In general, higher rent in the upstream and value-added in the downstream can be captured by a properly designed fiscal and contractual framework, which can promote both rent maximization and long-term growth of the industry (Tordo 2007). However, it is often the case that developing countries do not have enough expertise to design and implement these frameworks. A logical way to solve this issue is to create NOC, which will replace the need for regulation.

Socioeconomic goals are often an important part of national mission. This category includes varying objectives depending on the country needs, but in general can include creation of employment opportunities, maintaining social infrastructure (schools, hospitals, etc.), subsidizing fuel prices for local economy (especially in net oil importing countries),

infrastructure development (roads, bridges, etc.). NOCs can serve as a substitute for a social safety net if public facilities are underdeveloped. These goals can be achieved through direct provision by a company and lead to a redistribution of wealth, or through subsidizing separate funds (McPherson 2003; Horn 1995).

Final, and the most relevant to this study, part of NOC national mission comprises political gains. State control of an oil company can generate political power both inside and outside the country. Domestically, all the socioeconomic decisions – employment, social infrastructure, subsidies – significantly influence lives of voters (McPherson 2003). NOC is also a powerful force in controlling local petroleum industry. Outside of the country, it can be used to pursue goals of foreign policy and national security: promoting bilateral trade, securing fuel supplies, obtaining political or military support and others.

To sum up, NOC is one of the most important types of SOEs. Government control often results in “double bottom line”, when NOCs have to pursue both commercial goals and objectives of a national purpose. The latter may include a broad range of objectives, such as foreign political goals. These distinctive features of SOEs led earlier researchers to the conclusion, that companies of this type are unlikely to internationalize (overview of these arguments and recent counterarguments at Cuervo-Cazzura 2018). First, investing abroad were seen as a loss to a national economy. For this reason, SOEs were encouraged to use local resources, employ people at home country and invest locally even if it led to higher costs or lower efficiency. As a result, the research predicted that SOEs would be reluctant to invest in stable presence abroad or change their products for foreign markets. In this case, exporting would be a better option. Second, SOEs are more inflexible institutions relative to privately-owned multinational companies. The implications of the latter factor include strong preference for long-term contracts (and working with foreign SOEs), and inability to keep up with the pace of innovations in certain industries. Finally, SOEs might be unable to compete in foreign markets because they do not possess necessary ownership advantages, while at home they enjoy a special preferential regime.

However, since the liberalization of outward investment regulations and growth of emerging economies in 1990-2000-s internationalization of SOEs have rapidly become a widespread phenomenon in world economy. Thus, researchers have found several possible explanations, that present counterarguments to previous research (Cuervo-Cazzura 2018). On the one hand, SOEs were found to be heterogenous in some aspects. Some of them operate in inherently domestic industries, such as alcohol beverages production monopoly. Others were created to internationalize and provide home country with natural resource. Another identified factor was the importance of state policy. The internationalization process of a SOEs is very

much determined by restrictions or incentives created by home government. In particular, the absence of traditional ownership advantages can be an exact reason for internationalization – government may encourage its SOEs to invest in developed countries to develop or acquire these advantages. Thus, SOEs have a number of specific traits, that influence their FDI decisions. This will be analyzed in more detail in the next section.

1.4 Internationalization idiosyncrasies of emerging market SOEs and recent empirical research findings

General frameworks of firm FDI decisions discussed in the first section of this chapter were originally developed to explain the behavior of privately owned multinational companies from developed countries. However, due to a number of distinctive traits of SOEs, outlined in the previous section, coupled with the fact that the absolute majority of NOCs are from developing home countries, these frameworks should be adapted. In this section we will start by discussing specific traits of emerging market (EM) MNCs internationalization and how they are related to those of SOE. Then, we will look at the recent empirical research in this field, as well as at the studies of NOC internationalization idiosyncrasies. In this way, we will identify specific area in NOC internalization process, that lacks sufficient attention of scholars. Further, on the basis of EM SOE internationalization literature we will develop a proposition in regard to this area and proceed with empirical analysis.

Internationalization of MNCs from EM (EMNC) is one of the distinct and increasingly important stream of literature due to growing role of developing countries in their economy. So far, researchers have identified that EMNC internationalize in a different way from developed countries multinationals, in that the former have another set of ownership advantages, as well as other strategic intents. The reason for this is the home country embeddedness of EMNCs, which plays out in three areas (Meyer 2018).

Firstly, institutional environment of home country influences the access to resources and shapes capabilities development, as well as the way EMNCs employ them when investing abroad (Hennart 2012). EMNCs often have to operate in a weak institutional environment, subject to market imperfections, government interventions and weak rule of law. Secondly, EMNCs rely on home country resources base, which can provide with FSA, unavailable in developed countries. It can be natural resources endowment, low cost labor, etc. On the other hand, EMNCs may lack traditional ownership advantages of multinationals from developed countries, such as technologies, brands, managerial skills. This leads to a specific strategic intent of emerging market multinationals – desire to overcome gaps by actively investing in emerging markets, which is called strategic assets seeking (Meyer 2018). In particular, EMNCs acquire

brands and technologically developed companies, which leads to ‘leapfrogging’ of less risky and expensive stages of internationalization.

Finally, home country business ecosystem affect the opportunities for internationalization. The term refers to a network of formal links to business groups, as well as informal networks with supplies, government and peers. The role of ecosystem is especially important in EM due to weak institutional environment and bottlenecks in access to certain assets common in developed countries (Hobdari 2017).

These three factors of home country embeddedness, as well as the lack of conditions for developing traditional ownership advantages in emerging markets means, that EMNCs possess a different set of FSAs. They arise from local conditions, and, as a result, better suited to developing country context (Li and Shapiro 2018). EMNCs ownership advantages can be grouped into six categories: resources, marketing, operational, institutional, political and innovative capabilities.

The first type of emerging market FSAs is based on natural resources, such as oil&gas reserves. Companies can both extract and export them, and exploit them to build other advantages. For instance, Saudi Aramco internationalization builds on vast hydrocarbon reserves of its home country. The company both exports them, and create joint ventures abroad in downstream (refining) with a condition that host country will secure supply of Saudi oil to these refineries.

Second type includes marketing and distribution capabilities. It means, that EMNCs often have large home country customer base, that allows them to understand the needs of consumers from other emerging markets. This allows the companies to develop products suitable to specific budgets and needs, although they do not possess extensive R&D capabilities (Ramamurti 2012).

Next type comprises operational capabilities – ability to manage labor intensive production processes and low-cost supply chains. To some extent, these capabilities can be transferred to other emerging economies (Ramamurti 2012). The fourth type refers to institutional capabilities – operating in the environment of institutional voids, dealing with organized crime, understanding of privatization processes – knowing how to deals with these widespread in EM phenomena allows EMNCs effectively overcome obstacles across different developing countries (Meyer 2018).

Political capabilities can also become a competitive advantage, because they allow to get preferential access to limited resources at home and compete with multinationals from developed nations at host countries with similar political and institutional setting. The last two sets of capabilities explain why EMNCs often prefer to invest in other developing countries (Meyer 2018).

The last type are innovation capabilities, also arising from local conditions. EMNCs initially performed adaptation of imported products to their markets. Some of them started to develop in this fields, such as ‘frugal innovation’ – creating very low cost versions of products for local markets. Such innovations can be transferred to other EMs and create an ownership advantages compared to developed countries MNCs (Meyer 2018).

Thus, EMNCs differ in their FSAs and home country conditions, which make them to diverge from traditional patterns of FDI. Building on these traits, a special adaptation of internationalization theory for EMNCs was developed by researchers, which was summarized by Buckley et al. (2006). It is especially useful for this paper because it not only takes into account distinct traits of EMNCs, but also those of SOEs. In other words, his theory combines findings of two relevant streams of literature – internationalization of emerging market firms and state-owned firms. We will first consider the theory itself and then move to recent empirical studies of EM state-owned firms FDI.

According to the theory, the specific patterns of EM state-owned multinational companies (SOMNCs) foreign investment strategy result from three factors: capital market imperfections, special kind of ownership advantages, and distinct institutional factors of home countries.

Capital market imperfections in emerging markets mean that companies may have an access to capital at below-market rates, which allows them to invest in projects with lower rates of return or overbid for them. In essence, cheap capital is used ownership advantage in internationalization strategies (Buckley 2004). Depending on country conditions, market imperfections can be caused by a combination of some of the following factors, common to emerging markets:

1. Inefficient banking systems may allow cheap loans as a result of deliberate state policy, or as a result of a lack of information or experience.
2. Conglomerates may have internal banks, which provide capital at a subsidies rates of return without additional supervision.
3. Family finance is available to companies, owned by family members at below-market rates.
4. State-owned firms are often less constrained by the risk of costs overrun because of the “soft budget” – state will bail-out SOEs in case of bankruptcy or provide additional financing if necessary.

These reasons are, in turn, caused by the lack of independent technical and financial evaluation of funding, non-commercial goals of FDI decisions of SOE and limited perception of failure risks. Chinese investments are a typical example of capital market failures – over-bidding and acquisitions were for some time a ‘normal mode of entering of host economies’(Warner et al. 2004).

Another distinctive feature of SOMNC internationalization strategy is that its ownership advantages are different from those predicated by general theory (discussed above). Apart from cheap capital, SOMNC may have an advantage of home country embeddedness or ability to engage in beneficial relations with local counterparts to get access to their resources – relational asset (Buckley et al. 2006).

Embeddedness, in this case, means that SOMNCs are initially from emerging markets, which often have weak or moderate levels of institutional strength. Thus, companies have an inherent experience of operation in such environment, which gives them an advantage in acquiring “local knowledge” in similar contexts in other countries (Henderson and Ferguson 2014; Buckley et al. 2007). Relational asset (Dunning 2002) means the ability to develop informal or unconventional networks to acquire information about investment opportunities, facilitate favorable decisions making and negotiation processes in a host country.

The third feature of SOMNC foreign investment strategy is the influence of local institutions (‘rules of the game’, North 1990). Institutional environment has a strong influence on firm strategic decisions, both in formal and informal ways. SOMNCs are subject to institutional influence from government, such as preferential access to resources, political support and access to information, or vice versa – restrictions, numerous approvals of investment decisions, quotas. Thus, internationalization decisions are shaped and directed by official and informal institutions. This leads to the distortion of market-oriented incentives predicted by general theory. In particular, emerging market SOMNCs are often encouraged by home governments to invest in particular countries and projects not to realize its firm-specific advantages by combining them with country-specific advantages, but to develop those ownership advantages in the future. For instance, Chinese government supported asset-seeking acquisitions by its companies in developed countries to gain access to technologies, using vast amounts of cheap capital (Buckley et al. 2006).

More fundamental interpretation of emerging markets SOE internationalization decision was undertaken by Wang et al. (2017). The authors contend, that state influences firm behavior through institutions – formal and informal in three different ways. One is the coercive isomorphism – political pressure and state regulations guide FDI decisions in a favorable for state way. The second type of influence is normative isomorphism – managers and executive

conform their decisions and behavior to established norms, which are significantly influenced by state authorities in emerging markets. Finally, mimetic isomorphism means, that firms imitate strategic behavior of successful firms. For instance, SOEs may internationalize to be perceived as “national champions” and get more state support.

All three types of state institutional influence changes the access of a firm to resources and even the ability to use its own resources. This is the mechanism that changes FDI decisions, since the general theory predicts that foreign market entry is bundling of firm-specific assets and local assets. Thus, Wang et al. (2017) show, that state involvement influences firm-specific assets availability. Also, the authors distinguish between the effects of state equity ownership and government affiliation on either local or national level (connections of executives and state officials through participation or employment in the same entities, current or previous).

In particular, their empirical research suggest that either type of state involvement facilitates internationalization thorough an increase in FDI. The authors interpret in the following way: politically connected firms have better access to resources, information and may even influence state regulations. Also, they identified, that state ownership facilitates resource-seeking FDI, that can be interpreted by the goal of central government to ensure natural resources supply (discussed in the previous section).

Thus, these characteristics of SOMNCs internationalization process have a number of important implications to all three elements of the traditional paradigm – ownership and locations advantages, as well as internalization process. Some of them were already applied by scholars to NOCs in regard to ownership advantages and location choices. Recent empirical studies have also provided insights into how emerging markets SOMNCs execute FDI in practice in terms of internalization process. The summary of the most relevant empirical research is given in table 4. The table presents information about exact empirical setting and results, which is necessary to get an understanding of what has already been established, and what is left to be analyzed.

The first important implication of home government political support, non-commercial goals of SOEs and imperfect capital markets is higher risk tolerance of state companies while investing in countries with weak institutional environment, which is often the case in the oil&gas industry given the pre-determined allocation of hydrocarbon resources.

One of the reasons for higher risk acceptance is that SOMNCs are less exposed to expropriation risk of their foreign subsidiaries. It is a significant factor for any company in considering FDI. It exceeds many other concerns, such as macroeconomic uncertainty or labor market inefficiencies (World Bank 2009). Expropriation refers to the host-government intervention to property rights of an entrant, both as a one-time seize of assets and a series of

discriminatory moves (Kesternich and Schnitzer 2010). An important consideration here is not only the sunk cost nature of lost assets but also the lack of any mechanism, which allows forcing host government to repay for the property.

However, SOEs are less exposed to this kind of risk due to a number of reasons. According to empirical research results, the power of home state-owner of a company allows preventing SOEs' assets from being expropriated. State enterprise can make use of a strong political influence of home government. This 'gunboat diplomacy' varies depending on the geopolitical power of the state. It can be reinforced, if host government has a strong bilateral trade relations with home government and depends on the latter in terms of economic help (Duanmu 2014). In this case, government would back its company to prevent expropriation and to demonstrate its retaliatory power to reduce the risk of such events in the future (Knutsen, Rygy and Hveem 2011).

As a result, SOEs can invest in countries with weak institutional environment, because lack of property rights can be compensated by strong support of home government. An important implication of this study is that SOEs can be less constrained by expropriation risk in their decision on the level of ownership of foreign subsidiaries. Public companies often create EJV rather than WOS to prevent expropriation but for SOE it less relevant (Asiedu and Esfahani 2001). Therefore, it potentially leads to a higher level of ownership by SOEs in overseas subsidiaries in risky environments.

Empirical evidence of SOEs higher risk tolerance was found in a research conducted by Garcia-Canal and Guillen (2008). They analyzed foreign entries of Spanish firms into Latin American countries. The evidence from their research is highly relevant to this study in several prominent ways.

First, they analyzed foreign investment decisions of companies from highly regulated industries – utilities, telecommunications, natural resources extraction. These industries have three important properties. One is that these industries are very concentrated and have features of natural monopolies – to be profitable they exploit economies of scale, but to achieve them it is necessary to secure large consumption amounts, that is market share.

Table 4. Summary of the most relevant empirical studies of emerging markets SOEs internationalization

Article	Methodology ⁴	Main findings	Sample
Wang, Hong, Kafourous, and Wright (2017). Exploring the role of government involvement in outward FDI from emerging economies.	Predictors: marketing and technological resources (measured as expenditure per employee), firm capabilities (total factor productivity), state ownership percentage, government affiliation level (local of the country) Outcome: the annual amount of FDI (in yuan) for each company	1. Increase in government involvement (state ownership or affiliation) level leads to an increase in firm FDI. 2. Affiliation to a high government level increases investments in developed markets. 3. State ownership increases resource-seeking FDI, while government affiliation increases market-seeking FDI.	626 Chinese companies (SOEs and POEs ⁵) during 2006-2007, no industry specification
Pinto, Ferreira, Falaster, M.Fleury, and A.Fleury (2017). Ownership in cross-border acquisitions and the role of government support.	Predictors: institutional distance (calculated through 9 factors) between home and host countries, country knowledge (Berry et al. 2010), business knowledge, government stake , financing and political ties as separate variables. Outcome: ownership in an acquired firm – either full (100%), or partial (less than 100%).	1. Emerging market MNCs tend to make a full acquisition to access knowledge. 2. Government stake and political ties both increase the chance for a company to have a full cross-border acquisition rather than partial. 3. Firms with government participation or political ties prefer full acquisition to partial when accessing business knowledge.	262 cross-border acquisitions by 134 Brazilian firms (POEs and partially state-owned) during 2006-2012, no industry specification
Duanmu (2014). State-owned MNCs and host country expropriation risk: the role of home state power and economic gunboat diplomacy.	Predictors: property right protection index (Heritage Foundation), state ownership , UNO GA voting index, % of country export to China. Outcome: the scale of FDI (log-transformed USD value) in a company-year-country combination (scale of FDI in a given location).	1. High expropriation risk reduces FDI to a host country. 2. Positive political relations mitigate expropriation risk, especially for SOEs. 3. The economic power of home government (measured as host country export dependence on Chinese market) mitigates expropriation risk for SOEs.	894 FDI by Chinese companies during 2003-2010 (SOEs and POEs, defined as zero state ownership), no industry specification

⁴ In this table each paper includes several types of regression models.

⁵ POE stands for privately-owned enterprise – the one with majority stake held by non-state investors. Otherwise (for some examined papers), the meaning is specified.

Pan, Teng, Supapol, Lu, Huang, and Wang (2014). Firm's FDI ownership: the influence of government ownership and legislative connections.	Predictors: foreign institutional environment (Economic Freedom Index), % state ownership , legislative connection (1 if present – one of the executives is a member of the legislature). Outcome: percentage ownership in a foreign subsidiary	1. Positive institutional environment increases ownership in foreign subsidiaries, vice versa is also true. 2. The influence of institutional environment on a foreign subsidiary ownership is negatively moderated by state ownership and legislative connections – firms with either factor have higher subsidiary ownership in unfavorable environments and lower in favorable ones.	1617 foreign subsidiaries of 594 listed Chinese companies (both SOEs and POEs), studied as of 2010, no industry specification
Lin and Jiang (2012). State ownership effect on firms' FDI ownership decisions under institutional pressure: a study of Chinese outward-investing firms	Predictors: survey results of Chinese executives (Likert scale) as proxies for home and host country regulatory restrictions, host normative pressure; state ownership . Outcome: a choice between EJV and WOS	1. SOEs are more sensitive to home and host country regulatory restrictions, as well as host country normative pressure (negative image): the more severe any of these conditions, the more likely is that SOEs will opt for an EJV (defined as entrant stake less than 95%) rather than WOS.	132 FDI entries of Chinese companies (SOEs and POEs) during 2000-2006, no industry specification
Buckley, Clegg, Cross, Liu, Voss, and Zheng (2007). The determinants of Chinese outward foreign direct investment.	Predictors: 12 factors and their interaction effects. Outcome: distribution of outward FDI in dollar value (location choice)	1. Investments are positively associated (increase) with an increase in political risk, cultural proximity, host country inflation, Chinese FDI policy liberalization, host country market size. 2. Market openness, exchange rate, geographic distance, resource endowment and market size are insignificant predictors of OFDI distribution.	Outward direct investments in USD from China (only SOEs) across 49 host countries during 1984-2001, no industry specification
Ramaswamy, Yeung, Laforet (2010). China's outward foreign direct investment: location choice and firm ownership.	Predictors: interaction between ownership and host country political risk, resource endowment, number of patents, geographic distance as predictors in a regression. Outcome: number of entries (location choice).	1. SOEs have a higher tendency to invest in countries with high political risk and in locations with larger geographic distance from the home country. 2. Both SOEs and POEs invest in resource-rich countries, as well as large developing markets.	1350 Chinese FDI (SOEs and POCs according to dominant stakeholder) projects during 2006-2008 across 59 countries, no industry specification

<p>Garcia-Canal and Guillen (2008). Risk and the strategy of foreign location choice in regulated industries.</p>	<p>Predictors: macroeconomic uncertainty (authors calculation), political instability (POLCON V), number of previous entries and ownership type. Outcome: number of entries in each country-year-company combination. Influence of firm ownership and experience on attitude towards FDI in risky locations.</p>	<ol style="list-style-type: none"> 1. Firms in regulated industries are averse to macroeconomic risk but eager to invest in countries with discretionary policy decisions. 2. Partially state-owned firms are less risk averse accordingly to these 2 factors. 3. As companies accumulate experience (number of entries), they develop an aversion towards entering risky locations. 	<p>247 FDI entries of Spanish companies (banking, oil&gas, telecommunications, utilities sector) in Latin American countries during 1987-2000 (Partially state-owned and POEs defined as zero state stake)</p>
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This leads to an oligopolistic nature of regulated industries. Second, entering a foreign market often requires a permit or a license from the host government. Third, government tends to keep a significant share of the industry market in its ownership. Due to these reasons, strong first-movers advantages exist in these sectors of the economy. Foreign entries of companies in regulated industries require large upfront investments, frequently in a form of greenfields or acquisitions. As a result, companies are less risk tolerant and more averse to investments in countries with poor quality of institutions.

Second, Garcia-Canal and Guillen found that state ownership acts as a moderating factor in investment decisions regarding entrance to risky locations. They proved, that partially privatized SOEs prefer higher ownership of subsidiaries abroad. Researchers suggest a theoretical explanation to this result: managers of partially privatized firms are at risk of losing their jobs because of the change in ownership structure, which they try to confront by bold moves. In comparison, fully state-owned companies have no incentive to invest abroad because their position at home market is strong and they do not have much to gain from internationalization. Managers of fully private companies demonstrate average market sentiment to risk (Garcia-Canal and Guillen 2008).

Although this theoretical explanation is questionable and requires further empirical evidence, their particular research contributes to this paper by directly considering the influence of state ownership on the level of participation in foreign subsidiaries: with an increase in state stake in a company, it increasingly prefers higher ownership in foreign projects. The authors considered companies from all sectors, only three of which were from oil&gas and of a relatively small size (which is not representative enough for the industry). However, all companies were from regulated industries, which share common features with oil&gas industry. Hence, there is an opportunity to extrapolate results of their research to global oil&gas industry.

Another relevant research was done by Pan et al. (2014) on a sample of Chinese companies. The researchers argued, that two political factors – state ownership and legislative connection – influence transaction costs associated with foreign market entry, thus changing the ownership level in overseas subsidiaries.

In particular, state as an owner affects transaction costs in two ways. On the one hand, state ownership makes companies pursue non-commercial goals, as was already discussed. It decreases the relative importance of commercial goals, which means that transaction costs are perceived as less in amount or less important. On the other hand, state provides its companies with additional resources (soft budget constraint, etc.), which allows covering additional transaction costs, associated with uncertain environment (i.e. weak institutions).

The second factor – legislative connections – means, that if some of the top executives, members of the board of directors, or a shareholder with more than 10% equity is a member of home country's legislative body, then this company has additional political embeddedness in the country. Legislative connections decrease transaction costs for company in three ways. First, politically connected firm enjoys the flow of information regarding relevant legislation ahead of time and of better quality, which allows correcting its FDI decisions beforehand. Second, such company can influence change in regulations of home country regarding FDI, bargaining better conditions or additional resources. Finally, legislative connections also provide social ties, which is an important way to access information and promote favorable decisions in emerging countries.

Empirical results of the study provide evidence, that state ownership serves as a negative moderator to the level of participation in foreign subsidiaries in uncertain environments. It means, that the higher the state ownership, the large stake a company will pursue while entering a foreign market. The significance of this research is that the authors accomplished important goals – they connected political factors to transaction costs theory so that they can complement theories of FDI, based on frameworks of Coase and Williamson.

So far, empirical evidence was presented to the fact that state ownership makes companies have a larger stake in their foreign subsidiaries. However, there is also some evidence of the opposite. The most relevant paper in this regards was written by Cui and Jiang (2012). Taking an institutional perspective on FDI decisions, the authors examined how home and host countries regulatory restrictions and normative pressure affects ownership level in foreign subsidiaries of Chinese companies.

The first argument of researches states, that companies with majority state ownership are influenced not only by outward investments regulations, as any other firm. SOEs are also dependent on government in terms of resources and valuable inputs in home markets and their major investment decisions should be approved by several state entities. Also, Chinese government preferred joint ventures some time ago because of their positive effect on the country economic development. As a result, SOEs strongly aligned its FDI decisions with government preferences and choose JVs instead of WOS.

According to the second argument, SOEs are subject to intense scrutiny of host governments because of their strong affiliation with home country government. The pursuit of non-commercial goals and backing by powerful government make other countries impose additional restrictions on the investments of such SOEs to make sure that their FDI do not harm their economies for the good of Chinese economy. At the same time, JVs with local companies

provided opportunities to reduce this skepticism. For this reason, Chinese SOEs again preferred shared ownership of foreign subsidiaries to WOS.

Finally, any investor is subject to the “liability of foreignness” – the necessity to obtain local legitimacy because of the different normative framework, in which an entrant has to operate in comparison with home market. In case of SOEs, this liability is magnified, for the same reasons – public skepticism towards their goals. Formation of JV with a local company helps to overcome this issue by ensuring the public that FDI will support their economy, and by providing an entrant with information regarding local norms from a partner.

These arguments were tested on a sample of Chinese companies and a negative moderating effect of state ownership on the level of participation in foreign subsidiaries was confirmed. That is, the higher the former factor, the lower the latter. The results of this research contradict previously cited studies. However, the extent to which these findings can be generalized is questionable. First, the fact that SOE aligns its strategic decisions with government policies is more than reasonable (unless SOE is a more powerful actor in this relationship). At the same time, the study was concerned a specific period in Chinese outward direct investment policy. Another paper examined this policy through multiple periods and confirmed, that government preference for JVs changes to WOS (Buckley et al. 2007). Government policies differ among countries and are subject to change in time. Therefore, this argument cannot be generalized to all SOEs.

Second, it is also hard to question the existence of restrictions and liability of foreignness towards FDI in the oil&gas sector. However, multiples examples (see section 2) demonstrate, that government can by-pass restrictions to its SOEs by negotiating directly with host government. Also, public image of Chinese companies cannot be generalized to all SOEs because the perception of different governments intents (and their SOEs in turn) varies across countries. Therefore, empirical findings regarding the positive moderating effect of government ownership on a higher level of participation in foreign subsidiaries capital were not significantly challenged yet.

In contrast to majority state ownership, the influence of minority stakes held by government on strategic choice of firms is much less explored. A number of studies found out that in weak institutional environments minority government stakes may have a positive influence on company performance. The main reason is that in a form of equity purchases state can provide financing, which is often hard to obtain due to underdeveloped capital markets (Wu 2011). However, this effect only occurs when state do not have some other residual way on influencing firm decisions (Inoue, Lazzarini, and Musacchio 2013). The main question for this paper is whether the effects of majority state ownership in terms of FDI decisions also apply to

companies with minority state ownership, possibly to a lower extent. Unfortunately, there even to theoretical findings, which would support some propositions in this regards. Due to this reason, the main focus of this study is to investigate the difference between two broad categories: majority and minority state ownership on internationalization decisions.

To sum up, emerging market SOMNCs internationalization differs from that of a private multinational company. It is a result of three factors: capital market imperfections, strong influence of emerging market institutions and distinct ownership advantages, such as relational asset and home country embeddedness. A different strategy of SOMNCs leads to another parameter of decision-making in deciding on the level of participation in foreign subsidiaries – state companies prefer a higher degree of control, even if it means overinvesting and dealing with significant risks.

Scholars have also applied findings of EMNCs and SOMNCs literature to understand the behavior of NOC internationalization (recent studies are summarized in table 5). In particular, recent studies concentrated on applying case study method to exploring strategic intent of NOC internationalization, their ownership advantages, and the influence of government ownership and intervention on both.

The comparative study of Chinese and Indian NOCs conducted by Meckling et al. (2015) demonstrated, that strategic intent is often a product of company and government cooperation and competition – coopetition, rather than a set of solely commercial or non-commercial goals. NOC depend on their home government for access to resources, maintenance of favorable regulations and political support abroad. At the same time, the government needs NOC to ensure supply of oil, or promote political or trade goals. Thus, NOCs is neither foreign policy arms of government nor independent powerful actors.

The combination of commercial and non-commercial goals of NOC is determined by two processes – marketization and governance reforms. Marketization refers to the process of re-orienting on marketing goals, commercialization of activities. Governance structure means a system of regulations and state entities that control oil&gas industry development in home country. The more marketized NOC is and the looser is industry regulations, the more a company will pursue commercial goals. Therefore, state influence on strategic intents of NOC is somewhat heterogeneous across countries.

Table 5. Summary of the most relevant studies of NOCs internationalization

Article	Methodology	Main findings	Sample
Lopez-Morales et al. (2017). Internationalization of state multilatinas: the multi-case study in the oil sector.	A case study of three largest South American oil companies internationalization with an emphasis of the relationship between resource endowment, company origin, state ownership and location of FDI.	1. Resource endowment significantly influenced location choice: Petrobras with resource scarce home country invested in developing countries with vast reserves, while the other two invested in developed countries.	PDVSA, Petrobras, Pemex internationalization modes from the first foreign entry for each company (apart from exporting).
Panibratov A. (2017). Russian oil and gas MNEs investing in China: the role of government in value creation.	A case study of two largest Russian NOCs internationalization to China with an emphasis on Russian government role in the process.	1. Russian NOCs country embeddedness facilitated entry to China – another country with the high role of informal institutions. 2. Russian government significantly helped its NOCs to internationalize through financing, intergovernmental agreements, and aid in transportation system creation. 3. Government involvement shaped the entry modes through intergovernmental agreements – primarily exporting through pipelines, but also JVs in the downstream.	Gazprom and Rosneft FDI to China (2002-2015)
Lai, Hara, and Wysoczanska (2015). Rationale of internationalization of China's national oil companies: seeking natural resources, strategic assets or sectoral specialization?	Case study of two largest Chinese NOCs outward FDI to identify intent for internationalization: seeking natural resources, strategic assets or sectoral specialization (upstream companies invest in natural resources, while downstream - in strategic assets).	1. Sectoral specialization best explains the primary goal of investing abroad: upstream-oriented CNPC concentrated on exploration and production projects, while downstream oriented Sinopec heavily concentrated on acquiring technological expertise, managerial skills, distribution networks. 2. Strategic assets seeking is the second most important intent for EMNCs FDI.	CNPC and Sinopec FDI deals during 2002-2010.

Meckling, Kong, and Madan (2015). Oil and state capitalism: government-firm competition in India and China.	A comparative case study of Chinese and Indian NOCs internationalization and state regulation of the industry in two countries.	<ol style="list-style-type: none"> 1. NOCs internationalization is influenced by a hybrid of state non-commercial goals and market-oriented goals. 2. The state acts both as a supporting and competing for entity, that results in competition of NOCs and government interests. 3. The exact combination of intents in such a hybrid is a result of industry governance reforms and marketization processes. 	CNPC, Sinopec, CNOOC, GAIL, OIL, ONGC, IOCL, HPCL during 1990-2013.
Bass and Chakrabarty (2014). Resource security: competition for global resources, strategic intent, and governments as owners.	<p>OLS and binary logistic regression.</p> <p>Predictors: state ownership percentage, target country resource richness, firm's experience working in a target country.</p> <p>Outcome: number and price of acquisitions of exploration and production assets.</p>	<ol style="list-style-type: none"> 1. Firms with higher state ownership tend to prefer investing in exploration rather than production assets and pay more for the former. 2. Firms with higher state ownership prefer to acquire exploration assets and pay more for them in resource-rich countries, in which they have prior experience of FDI. <p>Thus, SOE is more concerned with future supplies.</p>	404 upstream transactions (and the price paid for each) during 2005-2012 of NOCs and privately-owned oil companies
Carvalho and Goldstein (2009). The 'making of' national giants: technology and governments shaping the international expansion of oil companies from Brazil and China.	Case study of the largest oil companies in China and Brazil with an aim to identify what role firm level of technological expertise and government involvement played in the strategic intent and ownership advantages during internationalization.	<ol style="list-style-type: none"> 1. The way government involvement is conducted influences the strategic intent of emerging markets oil companies. 2. Brazilian government fostered specific (deepwater) capabilities development by the company, which gave it an advantage. As a result, Petrobras was relatively independent in its internationalization, primarily investing in downstream (strategic asset seeking). 3. Chinese government encouraged large-scale investments both to secure natural resources supply and to gain technological capabilities (strategic asset seeking). The main advantage of firms in this case was political support and access to capital. 	Petrobras (study period: 1972-2008), CNPC, Sinopec, CNOOC (1990-s – 2008)

Moreover, the way government interfered in the process of development of an oil company during a pre-internationalization stage influences its ownership advantages. Carvalho and Goldstein (2009) found, that if government emphasized strategic capabilities development in-house, then NOC might have a more traditional FSA, similar to that of IOCs. In turn, it would give an oil company more freedom in strategic decisions due to less resource dependence on government. However, such a situation requires a presence of local conditions, that would allow or require development of such conditions. More often than not, governments encourage NOCs to invest abroad to acquire lacking FSAs, such as technologies, rather than apply them for commercial benefit.

Government involvement was also found to interact with other determinants of strategic intents, namely resource endowment. If a home country have ample hydrocarbon reserves, than government would encourage companies to invest in downstream assets in developed countries, acquire technological capabilities in refining and exploit resource richness. In contrast, the lack of oil&gas would mean that NOCs concentrate on ensuring stable supply of the resource to the home country and invest in upstream assets abroad (Lopez-Morales et al. 2017).

The last factor is powerful enough to overrule government regulations heterogeneity. Bass and Chakrabarty (2014) provided empirical evidence of NOC preference to invest in upstream exploration rather than exploitation assets. That is, relative to IOCs, national oil companies invest more in explored, but untapped oilfields. NOCs are also ready to pay more for this kind of reserves. Bass and Chakrabarty interpret this fact from a resource security perspective – governments want to ensure stable oil&gas supply in the future and makes their oil companies to buy reserves that can be exploited later.

Another explanation of NOC strategic intent was outlined by Lai et al. (2014). The authors claim, that NOC invest according to their sectoral specialization: predominantly downstream companies invest in refining and distribution of oil, while upstream companies invest in exploration and production project abroad. While there is rationale in this statement, at this point it was only confirmed by a case study of two Chinese NOCs, which does not seem enough to be generalizable for all NOCs.

Finally, as with other SOMNCs, government was confirmed to be an important supporting but also directing partner in NOC internationalization. Case study by Panibratov (2017) identified a crucial role of government in the internationalization of two Russian NOCs to China. On the one hand, state political efforts and financial support allowed to create large-scale pipeline infrastructure and decrease risks through high level intergovernmental negotiations. On the other hand, Russian NOCs did not have much choice but to agree to proposed projects. Although the commercial viability of the projects may not be questionable, that degree of

managerial autonomy in decision making, i.e. in location and internalization choices, was significantly affected by strong government involvement.

1.5 Proposition statement

In the previous sections, it was established that firms decide to internationalize when there is an opportunity to combine their firm-specific advantages with local complementary advantages and do so by internalizing the operations abroad. The mode of market entry is a result of two factors. One is a desire for control of an entrant, which is determined by a tradeoff between risk and return. Another factor is the characteristics of assets of an entrant and of local companies. If there are high costs to trade these assets in the market, that is, to sell or obtain them on a contractual basis, then loose forms of control for market entrance cannot be used (licensing). Further, the choice of the level of participation is a result of local market efficiencies – the same complementary assets can be obtained at assets, asset services, or firms markets.

Upstream oil&gas segment has a number of specific traits, which differentiate it from other industries and influence the general model of firms internationalization. One important characteristic is immutability of geographical resources – hydrocarbon reserves are asymmetrically distributed. Therefore, companies have to invest in locations, where these reserves are present. They have to do so despite the fact that the majority of these countries have a poor quality of institutions, which increases transaction costs. The result is that host countries governments have strong location advantages. The last two facts often lead to inefficient asset and asset service local markets because of the restrictive regulations of the host government.

At the same time, oil companies use their ownership advantages to exchange for locational advantages of host countries. However, ownership advantages have high transaction costs to transfer. Coupled with the need to recover depleted resources, it means that oil&gas companies need to internalize operations, which effectively reduces their choice to either WOS or EJV.

Apart from the specifics of the oil&gas industry, the general model of internationalization is influenced by state-ownership of the majority of oil companies. National oil companies as a phenomenon in international oil&gas economics were thoroughly studied in terms of their efficiency and strategic goals. Recent studies have also highlighted idiosyncrasies of NOC internationalization in regard to strategic intent and ownership advantages.

Meckling et al (2015) identified that the process of determining strategic goals is a result of cooperation and competition of home government and oil company management. It means, that the combination of commercial and non-commercial goals can differ based on the country context. However, Bass and Chakrabarty (2014) have found, that resource endowment of a

country is a factor more powerful than domestic political heterogeneity. In particular, governments are often concerned with long-term energy security, which makes them encourage their NOCs to invest relatively more in untapped oilfields to ensure future supplies. Another study found, that strategic intents of foreign expansion may be shaped by sectoral specialization – downstream companies invest relatively more in refining and distribution, while upstream – in exploration and production (Lai et al. 2014). Also, drawing on EMNC literature, scholars have pointed at the role of home country government in promoting FDI in NOCs in other countries, including those with the high importance of informal context (Panibratov 2017).

Thus, the research has recently focused on studying strategic goals and FSAs of internationalizing NOCs using case study method. Another area – internalization process, and, in particular, the influence of government ownership on the level of participation in foreign subsidiaries, have received less attention. At the same time, scholars of EMNCs and SOMNCs have developed and tested a number of propositions, that can be applied to NOCs to analyze the level of participation in foreign subsidiaries. These findings can be applied to national oil companies for three reasons: NOCs are state-owned companies (1), the absolute majority of largest NOCs (with only one exception) are from emerging markets (2), oil companies have to invest in risky locations (3).

In a recent study, Pinto et al. (2017) found that affiliation to a high government level or government stake in a company increases the chance for EMNC to make a full acquisition abroad, rather than partial. Also, state ownership increases the chances that a company will make a full acquisition if the intent of FDI is accessing business knowledge. It can be interpreted by the fact that EMNCs often try to build lacking ownership advantages abroad. Duanmu (2014) found support for the proposition that SOEs invest more in locations with weak institutional environments if their home country governments have high economic power or are in good political relations with host country governments. Pan et al. (2014) confirmed that economic uncertainty and political riskiness of host country reduces the level of ownership in foreign subsidiaries. However, this effect is moderated by state-ownership of legislative connections (in home country) of an entrant – either factor increases ownership level relative to POEs without legislative connections.

Earlier studies have also confirmed that companies with state ownership have a relatively higher level of participation in foreign subsidiaries in risky locations, which is highly relevant to the upstream oil&gas industry. Garcia-Canal and Guillen (2008) suggested, on the basis of empirical evidence, that partially state-owned firms are less risk-averse in an uncertain environment. Buckley et al. (2007) also found that SOMNCs relatively more invest in countries

with high political risk and larger distances from a home country. These propositions were further confirmed by Ramaswamy et al. (2010).

To conclude, scholars have found enough evidence that emerging market SOMNCs can deal with higher transaction costs, accept lower returns, and negotiate desirable conditions in uncertain environments. Reasons for that include non-commercial goals and political support of home government, availability of cheap capital, expertise in operations in weak institutional environments. As a result, state companies, in general, prefer and are able to obtain a higher equity stake in foreign projects in risky countries. These findings can be applied to NOCs to understand the influence of government ownership on the participation level in foreign subsidiaries, which leads to the following proposition.

Proposition: Majority state-owned oil&gas companies have a higher equity share in their foreign upstream subsidiaries relative to companies with no government stake.

2. Empirical research design

2.1 Empirical setting

To estimate the influence of state ownership on the level of participation in overseas subsidiaries a sample of 441 subsidiaries of 25 oil companies was analyzed. These oil and gas subsidiaries are upstream projects, located outside of the home country of a respective oil company. It is worth noting, that only those exploration projects were considered, that have already produced some positive results (in terms of commercial hydrocarbon reserves) because ownership stakes are often subject to change after initial exploration was finished. Thus, permits and licenses without any research made were not considered

Table 4. List of oil companies in the research sample.

Company (home country)	State ownership share (%)	Revenue (bln USD)
BP (the UK)	0	240
Shell (the UK, the Netherlands)	0	305
Exxon Mobil (USA)	0	237
Chevron (USA)	0	135
Total (France)	0	172
MOL Group (Hungary)	25	15
Petrobras (Brazil)	29	89
Eni (Italy)	30	63
OMV (Austria)	32	23
Gazprom (Russia)	50	105
PTT (Thailand)	51	63
Statoil (Norway)	67	61
ONGC (India)	69	22
Rosneft (Russia)	70	103
Sinopec (China)	71	363
PetroChina (China)	87	310
Saudi Aramco (Saudi Arabia)	100	363
PDVSA (Venezuela)	100	48
Sonatrach (Algeria)	100	31
KPC (Kuwait)	100	252
QP (Qatar)	100	50
Pemex (Mexico)	100	58
Petronas (Malasia)	100	46
Sonatrach (Algeria)	100	31
KNOC (South Korea)	100	20

Another constraint was the availability of data for non-public NOCs, and, on the opposite – the number of projects of IOCs. As a result, the most significant foreign upstream projects were considered, as defined by each company in terms of hydrocarbons output (amount extracted).

The companies for this sample were drawn from a widely accepted ranking of the leaders of global oil&gas industry - S&P Global Platts. The list includes global oil&gas companies based on a proprietary formula, which includes asset worth, revenues, profit, ROIC and other parameters. Those companies are top 25 in the Platts list, with a few exceptions – some companies were substituted with those with lower ranks because of the availability of data issue (in particular, Iranian and Nigerian NOCs). There are 16 companies with majority state ownership, 4 companies with minority state ownership and 5 companies with no government stake in the sample.

The unit of analysis is an observation – foreign subsidiary (upstream project), which consists of a company's stake in a separate foreign project, the share of home country government in that company equity ownership and economic freedom index value of a host country.

2.2 Method and variables

Simple linear regression model was used as follows:

$$\begin{aligned} \text{Company stake in a foreign project} = & b_0 + b_1 * \text{government ownership in a company} \\ & + b_2 * \text{economic freedom index} \end{aligned}$$

Thus, company stake is a dependent variable, measured as:

$$\text{Percent ownership in a project} * 100$$

The independent variable is state ownership in a company. For this variable, dummy variables were constructed to form 3 categories:

No state ownership (baseline category)

Minority state ownership (less than 50%)

Majority state ownership (more than 50%)

Consistent with the literature (Garcia-Canal and Guillen 2008) a control variable was added – economic freedom index – as a measure of institutional environment development. This will allow fixing probable negative correlation between weak institutions and level of ownership in a subsidiary, observed by general research on FDI modes (discussed in the first chapter). However, after simple regression, this variable proved to produce negligible results (discussion

below). For this reason, it was not included in the binary regression. In a simple regression control variable was added at the first stage (model 1), and independent variables at the second stage (model 2), which is the main focus of the study.

Binary logistic regression was applied as follows:

$$\textit{Company stake in a foreign project} = b0 + b1*\textit{government ownership in a company}$$

Company stake was a dependent variable, measured as a categorical variable with two types: minority company stake and majority company stake.

Independent variable was state ownership level in a company, measured as a categorical variable with three types: no state ownership (baseline category), minority state ownership, majority state ownership. In case of an equal stake in a project, the company-operator of the subsidiary was treated as a majority holder, because it controls an entity. No oil&gas companies with equal state and private ownership were observed in the sample.

The data on state ownership and foreign upstream projects of chosen companies was collected from their most recent annual reports and official websites. Economic Freedom Index values were taken from the website of Heritage Foundation – non-profit think tank, which estimates those values on an annual basis.

3. Empirical research results

3.1 Linear regression

The results of linear regression analysis are presented below. Model 1 shows the results when only the control variable was included. In model 2 independent variables were included. It can be seen, that control variable has virtually no effect on the outcome as measured by determination coefficient – 2,7%, while independent variables have a moderate size of an effect – 17,5%. The Durbin-Watson test indicates, that autocorrelation is not a concern for the model (statistic is less than 2).

Table 5. Linear regression model summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,166 ^a	,027	,025	22,021	
2	,418 ^b	,175	,169	20,329	1,595
a. Predictors: (Constant), Economic Freedom Index					
b. Predictors: (Constant), Economic Freedom Index, Minority state ownership, Majority state ownership					
c. Dependent Variable: Company stake in a project					

First model is significant at $p < 0.001$. The main model is also significant at $p < 0.001$ (table 6).

Table 6. Linear regression significance test (ANOVA^a)						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6010,646	1	6010,646	12,394	,000 ^b
	Residual	212890,783	439	484,945		
	Total	218901,429	440			
2	Regression	38306,991	3	12768,997	30,898	,000 ^c
	Residual	180594,438	437	413,260		
	Total	218901,429	440			
a. Dependent Variable: Company stake in a project						
b. Predictors: (Constant), Economic Freedom Index						
c. Predictors: (Constant), Economic Freedom Index, Minority state ownership, Majority state ownership						

A t-test of the control variable in both models is significant at $p < 0.001$, but indicates only a marginal change.

T-tests of other parameters indicate, that an increase in state ownership from 0 to a minority stake does not affect the company ownership of overseas oil&gas subsidiaries - coefficient is not significant at $p > 0.5$. At the same time, majority state ownership is a significant predictor with unstandardized beta of 19%, at $p < 0.01$ (table 7 below).

While the determination coefficient shows moderate size of an effect, the unstandardized coefficient (B) demonstrates, that the change in category of state ownership from 0 government stake to a majority stake leads to an increase of about 19% of a company share in its foreign project.

Table 7. Linear regression coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	53,723	4,178		12,858	,000		
	Economic Freedom Index	-,231	,066	-,166	-3,521	,000	1,000	1,000
2	(Constant)	38,921	4,311		9,028	,000		
	Economic Freedom Index	-,128	,062	-,092	-2,070	,039	,962	1,040
	Minority state ownership	4,396	2,621	,080	1,677	,094	,820	1,220
	Majority state ownership	19,048	2,222	,418	8,571	,000	,794	1,259
a. Dependent Variable: Company stake in a project								

Finally, matrix below shows that there is no significant correlation between independent variables in the model (less than 0,8).

Table 8. Correlations					
		Company stake in a project	Economic Freedom Index	Minority state ownership	Majority state owned
Pearson Correlation	Company stake in a project	1,000	-,166	-,094	,400
	Economic Freedom Index	-,166	1,000	-,003	-,177
	Minority state ownership	-,094	-,003	1,000	-,417
	Majority state owned	,400	-,177	-,417	1,000
Sig. (1-tailed)	Company stake in a project	.	,000	,025	,000
	Economic Freedom Index	,000	.	,476	,000
	Minority state ownership	,025	,476	.	,000
	Majority state owned	,000	,000	,000	.

3.2 Binary logistic regression

Binary logistics regression estimates the likelihood of a certain outcome based on the predictors, unlike the linear regression, which measures the direct casual relationship between independent and dependent variables. In this paper, binary regression estimates the odds of having a majority in overseas projects using state ownership in a company as predictors.

The results of chi-square statistic shows that the model is a highly significant fit for the data at $p < 0,01$. Results for the three rows are the same because one step model was used.

Table 9. Binary regression significance test				
		Chi-square	df	Sig.
Step 1	Step	43,029	2	,000
	Block	43,029	2	,000
	Model	43,029	2	,000

Results of Nagelkerke pseudo R square shows that the model predicts a moderate size of an effect of 14,1% (table 9). There is also an alternative measure produced – Cox & Snell R square. Both measures are computed to approximate determination coefficient for binary regression, in which this measure cannot be tracked directly.

Table 10. Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	433,987 ^a	,093	,141
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than ,001.			

Next page provides the table with parameter estimates and interpretation.

Results of the Wald test statistics indicate that minority state ownership does not make a significant contribution towards assessing whether a company will have a majority stake in a foreign subsidiary at $p > 0,05$. However, majority ownership is a significant predictor at $p < 0,01$.

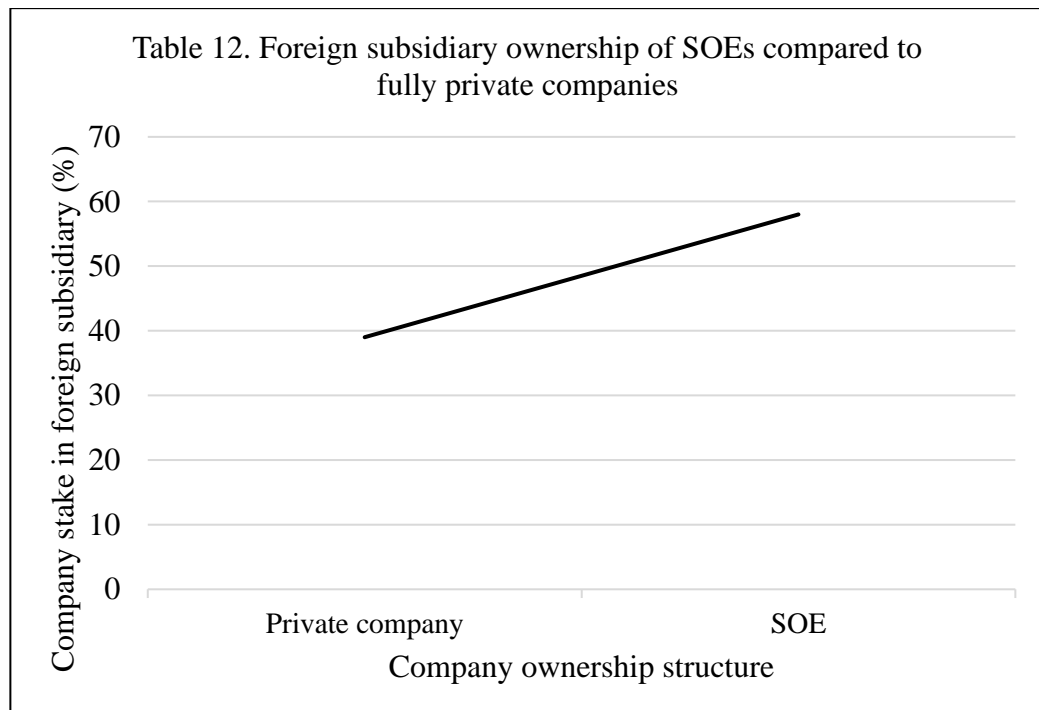
Change in the odds ($\text{Exp}(B)$) of having a majority stake relative to a minority stake in a foreign subsidiary when moving from no state ownership to a majority stake in a company is 5,56, which means, that companies with majority government ownership are more likely to have a majority in overseas project.

Table 11. Parameter Estimates							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Minority state ownership	,588	,371	2,518	1	,113	1,801
	Majority state owned	1,716	,293	34,180	1	,000	5,560
	Constant	-2,159	,249	75,257	1	,000	,115
a. Variable(s) entered on step 1: Minority state ownership, Majority state owned.							

3.3 Results discussion and research limitations

In this section we will outline empirical research results, for which the possible theoretical interpretation will be provided in the next chapter. The second part of the section is devoted to discussion of limitations of this research, as well as suggestions of how future research can build on these results.

The linear regression analysis showed that SOEs tend to have a 19% higher share in foreign subsidiaries, compared to companies with no government stakes (table 12, illustrative). Binary logistic regression also confirmed that likelihood of having a majority stake in a foreign subsidiary is higher for SOEs, compared to fully private companies. This could mean a significant difference in terms of control over the project, as well as the amount of investments and risks undertaken.



However, the impact of minority state ownership was statistically insignificant in the binary logistic regression. At the same time, linear regression showed, that the minority ownership is also an insignificant predictor. Therefore, it is possible to conclude, that having a minority state stake does not influence foreign subsidiary ownership decisions in the upstream.

Finally, an interesting observation is that control variable is a significant predictor of the level ownership in foreign subsidiaries, but have only a marginal influence on foreign subsidiary ownership (less than 0,5%). It means, that weak institutional environment is relatively less important for oil&gas companies when deciding on the level of participation in overseas projects. This result is consistent with the observation made in the first chapter on the specificity

of oil&gas industry – pre-determined character of hydrocarbon reserves geographical distribution makes companies invest in countries that possess these resources, diminishing the role of institutional environment.

Further research can extend the understanding of state ownership influence in FDI decisions in oil&gas industry by coping with four limiting factors of this study, namely time period, segment of the industry, control assumption and government homogeneity policy assumption.

The first one is the time frame – in this paper subsidiary ownership was examined at a one specified point in time (as of today), while there could be periods with different effects. However, this kind of research in the oil&gas industry requires an access to specialized databases, because there is a lack of information on the longitudinal changes (past projects) in subsidiary ownership in open sources. Second limitation is related to the previous one – changes in government policies. It was noted earlier that state authorities that exercise formal and informal control over SOEs might have changing preferences for EJVs or WOS in different time periods and among each other. Looking at the current state of affairs includes a snapshot of mixed results of a number of such periods.

Subsequent studies may also take into account the differences between segments of the industry – upstream, midstream and downstream. This research included only projects in the upstream segment. Since the validity of the hypothesis was confirmed – upstream oil&gas sector indeed has similar patterns of state ownership over upstream FDI decisions – the next step could be to investigate other segments of the industry. The rationale for the breakdown of research into three segments is that they have different capital intensity and associated level of risk. Moreover, oil companies may have strong capabilities in some, but not all of the segments, which influences their ownership advantages. In particular, one of the recent studies cited provided some evidence for sectoral specialization hypothesis, i.e. mostly upstream companies invest relatively more in E&P assets, while mostly downstream companies prefer investing in refineries, marketing and distribution assets. However, another tendency was also identified in the literature – oil companies strive to vertically integrate – internalize the whole value chain. Thus, additional research is warranted on this subject.

Next, an important assumption of this study is that level of ownership is equal to the level of control of state authorities over the company. However, this is not always the case. Several studies, particularly on Statoil (cited in the first chapter), indicate that oil&gas companies with majority state ownership may have significant autonomy in making decisions. On the contrary, companies with minority state ownership may still be largely controlled by government entities. The possible reason for that is the weak institutional environment of countries, from which

NOCs originate – informal ties and influence is often more important than formal ownership level and board of directors composition. Moreover, governments in emerging markets may have a lot of indirect methods of influence. In-depth case studies of a smaller sample of companies could help investigate this subject.

Finally, some research studies also pointed at the cooperative nature of the government-NOC relationship. That is, the combination of commercial and non-commercial goals is determined by a competition of both actors interests, as well as by their cooperation. The outcome is dependent on the oil&gas sector regulations, the composition of controlling entities, and on the extent of market reforms. This means that there should be some degree of heterogeneity of state influence over NOC strategic decisions, including internationalization process. As with the previous factors, this matter also calls for a case study method across a larger number of home countries to confirm the applicability of this proposition for the whole oil&gas industry.

4. Theoretical and managerial implications

There are several ways how this paper contributes to internationalization theory and study of NOCs. In this section, we will first look at how the results complement previous research of SOE and NOC internationalization by discussing the most relevant studies limitations and how this paper helps to tackle them. Next, we will suggest a possible interpretation of results building on findings of SOE literature. In particular, it will be done through the concept of control as a trade-off of risk and reward – we will look at how state ownership might affect both parts of a deal. After that, the practical relevance of the paper will be outlined for both state and private oil companies executives.

First, it was empirically proven that government as a major shareholder exerts influence over the level of participation of its NOCs in foreign subsidiaries. It alters the traditional decision-making pattern, predicted by general theory. In particular, governments as owners prefer to have more control and more equity participation in their NOCs foreign upstream projects, than do IOCs.

Specifically, this paper adds to the study of Ramaswamy et al. (2010) regarding SOMNC investment patterns in risky environments. The authors proved that state-owned companies prefer investing in uncertain environments because they have experience of operating there. Evidence from upstream oil&gas complements this pattern in that NOCs also prefer a higher level of control, i.e. risk in locations with weak institutional environments (given that the choice of FDI locations is limited for oil companies in the upstream). It means that SOMNCs prefer both similar institutional environment and a higher level of control in those locations.

Next, the paper gives partial confirmation to the findings of Pan et al. (2014) – state ownership moderates the level of participation in foreign subsidiaries. The researchers proved that favorable institutional environment (strong rule of law, political stability, etc.) positively influences the level of subsidiary ownership, which means, that the worse the conditions are in a host country, the lower is the participation level. At the same time, this pattern is moderated by state ownership – its presence increases participation in foreign subsidiaries in risky locations. This paper found, that institutional environment is not a significant factor for determining the level of participation in foreign upstream projects, which empirically confirms propositions of Henderson and Ferguson (2014). The reason for that is the pre-determined allocation of hydrocarbon reserves, mostly in countries with weak institutions. At the same time, it was also confirmed that state-ownership increases participation level in projects abroad. Combining the last two facts it can be concluded that this paper adds to the findings of Pan et al. (2014).

This paper also contributes to findings of Pinto et al. (2017). The authors provided evidence, that state participation increases the chance that an EMNC will make full acquisition rather than partial in its FDI. Pinto et al. (2017) focused only on Brazilian partially state-owned firms, while this study contributes by providing empirical evidence to their findings on the basis of a multi-country sample with SOEs, as well as companies with no or partial state ownership.

Finally, Garcia-Canal and Guillen (2008) proposed, that partial state ownership, not majority ownership, decreases risk aversion while investing in countries with weak institutions in regulated industries (natural resources, banking, etc.). In this study we found no evidence to the role of minority government stakes in the level of participation in foreign subsidiaries (which are mostly in risky locations). This may contradict the position of Garcia-Canal and Guillen. However, it should be noted that this argument is made with caution because the results are influenced by the geographical factor in the oil&gas industry.

Second, this study provides an additional link between the literature on internationalization of emerging market SOMNCs and that of NOCs on a basis of empirical evidence. Thus, it is possible to cross-fertilize two streams of research to produce more insights on FDI choices. It will help to create a more comprehensive theory of internationalization. In particular, the three factors from SOE literature - higher risk tolerance, more capital at hand, and the use of political power to facilitate favorable decision-making – are now linked to NOCs and can be used to provide possible interpretation of their strategic behavior abroad.

Taking a closer look, one might suggest that majority state-owned oil companies prefer to have a higher share in their foreign subsidiaries as compared to privately-owned oil companies due to two possible reasons. These two arguments stem from the internationalization theory discussed in the first chapter: more share means more control, which brings more risk and reward. Hence, risk and reward trade-off might be the key to interpreting the identified strategic pattern of NOCs. The factors discussed below have other implications (e.g. increasing liability of foreignness), but only relevant aspects will be outlined.

Regarding risk perception, SOEs have a different perspective on it. In particular, state ownership often means, that a company can have access to capital lending at below-market rates. Moreover, government may bail-out its SOEs in case of their bankruptcy. Even though it might not always be the case, state companies executives have such a perception, which influences their decision making. Apart from that, government may provide other types of financial incentives, such as tax breaks, customs fee reductions, loosening of regulations. These factors mean that financial reward is monitored less strictly than at POEs.

Another factor which influences risk perception is especially relevant for upstream oil&gas given that the majority of hydrocarbon resources are situated in locations with weak

institutional environment – political backing of home country government. This means that NOCs are often perceived abroad as foreign policy arms of a respective state. Hurting rights of such a company would mean conflict with its state owner. Such a relationship is particularly useful for dealing with expropriation risk, i.e. – property rights protection issue. Political backing also often means support in negotiations, giving access to information and even some forms of governmental aid to host countries in exchange for more favorable conditions for NOCs.

Finally, risks of operating in a country with the uncertain environment are evaluated in a different way by NOCs due to their home country embeddedness. The latter means that the absolute majority of state-owned oil companies originate from emerging economies, which themselves have weak institutional environment. NOCs have an inherent experience of operating in such conditions, that can be transferred and employed in other developing countries. Taking together these factors – government financial and political support, as well as home country embeddedness may not only change the perception of risk but also the amount of risk while investing in foreign upstream assets.

As for the rewards, state oil companies also could have a different measure of it. Along with common market measures of financial success of a foreign subsidiary, NOCs have a number of non-commercial goals, commonly referred to as ‘national purpose’. This purpose may include enhancing bilateral trade and even political relations (which is directly linked to government support), or exerting geopolitical power, or promoting national energy security. The latter is a very common goal of a number of NOCs from resource-scarce countries. Governments urge their oil companies to secure stable supplies of oil and gas to meet the demands of growing economies. As a result, obtaining explored but untapped reserves can in itself be more important to secure future supply, than maximizing financial return today by participating in already producing upstream subsidiaries. To summarize, achieving objectives that are part of ‘national purpose’ agenda often require having a higher control over a subsidiary, which means obtaining a higher share.

From practical standpoint, this paper gave evidence to several arguments. First, governments use political power and capital supply to help their NOCs get favorable conditions. For instance, outbid competitors in oil and gas fields distribution rounds. Second, NOCs often possess ‘relational asset’ – ability to operate in weak institutional environment. These two considerations can be useful for both NOC and IOC managers. For the first group, this evidence can give an understanding of the best practices of cooperation between government and NOC, and what it can achieve while investing in foreign assets.

For the second group, it also gives an idea about competitive capabilities of NOCs. Managers of private companies can be aware of non-traditional ownership advantages and devise

strategies how to cope with them by pressing on the weaknesses of NOCs, that possess characteristics of SOEs. Thus, both groups are now better informed and can prepare for the bargaining process, that determines which company will get a stake in valuable assets.

To sum up, government ownership changes the level of participation in foreign subsidiaries of oil companies. It can be interpreted through the change in the amount and perception of risk, as well as the measure of reward. This study aids the previous research of SOE internationalization by providing additional insights from upstream oil&gas sector. Managers may bear in mind possible implications of state ownership on establishing foreign subsidiaries to devise strategies of leveraging them (for national oil company executives) or tackling them (for POEs executives) to their benefit.

Conclusion

This paper aimed at investigating the influence of one of the most influential factors – state ownership – on the level of participation in foreign upstream projects. To achieve this goal, we looked at the deficiencies of general internationalization theory when applied at internalization of foreign upstream assets by national oil companies. These shortcomings were addressed by applying emerging market SOE internationalization theory findings, namely the impact of an alternative set of firm-specific advantages (cheap capital, relational asset and home country embeddedness), government political backing, and the pursuit of national mission on ownership level of foreign subsidiaries. The theory predicted, that these factors would make national oil companies to have a higher share in their upstream projects abroad as compared to privately-owned companies.

This proposition was tested by applying two different specifications – linear and logistic regressions – to a sample of 441 foreign upstream project of 25 leading oil&gas companies, as defined by Platts ranking. The data for empirical research was collected from annual reports and official websites of companies in the sample. Also, consistent with the literature a control variable was introduced – economic freedom index as a proxy for institutional environment strength. The reason is that institutional environment is one of the most important factors for companies when deciding on the location of foreign investments.

Results of empirical research confirmed the proposition – national oil companies indeed prefer a higher share in their foreign upstream projects than privately-owned oil companies. The possible interpretation is provided by emerging markets SOMNC literature – state companies measure rewards in a different way – they include non-commercial benefits in this notion. Also, they are more risk tolerant because of the home country government support. Apart from that, we found that minority state ownership is not a significant predictor of participation level in foreign subsidiaries. Thus, more research is required to clearly establish whether it is an insignificant factor alone, or interaction effects are present. Finally, institutional environment was found to be a negligible factor in determining the level of subsidiary ownership. It can be explained by pre-determined geographical distribution of hydrocarbon reserves, that limits choice of oil&gas companies of where to invest in the upstream. Findings of this paper can be used by industry professionals to devise strategies of dealing with NOC specifics in regard to establishing foreign subsidiaries: either leveraging strengths (for state company managers), or pressing on weaknesses (for private-company managers).

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